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UNITED STATES DEPARTMENT OF AGRICULTURE

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OFFICE OF INFORMATION

HOMEMAKERS' CHAT

Thursday, January 26, 1939.

(FOR BROADCAST USE ONLY)

Subject: "WHEN THE DIET LACKS VITAMIN A." Information from the Bureau of Home Economics, United States Department of Agriculture.

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This morning our Washington correspondent has sent us a report on some interesting vitamin studies made by the Bureau of Home Economics during the past year. Scientists have known the functions of the various vitamins for some time, and which foods were good or excellent sources of each one. Recent research has been directed toward finding out how much of a given vitamin the body needs daily. When that is determined accurately we may find that while our diets have been supplying some of the vitamin-rich foods we require, that we have had too little of the more important ones.

But let me read you our Washington correspondent's letter. She says:

"The Bureau of Home Economics has been working on a study of the requirements of grown men and women for vitamin A. One of the early signs that a person is not getting enough vitamin A is "night-blindness."-that is, inability to see well in a dim light.

"The scientific explanation for this is that lack of vitamin A affects the retina- that part of the eye that receives the image formed by the lens. It is the immediate instrument of sight and is connected with the brain by the optic nerve. The sensory part of the retina is made up of rods and cones. The back center of the retina is made up of cones alone. This is the part of the eye that distinguishes color and is in line with objects brought in sharp focus. Scattered about the central cones are the rods. They promote side vision. While focusing on an object straight ahead, at the same time a person with normal vision can see objects far to each side, although not distinguishing them nearly so clearly. The "rods" in the retina of the eye - are evidently more seriously impaired than the cones by the lack of vitamin A. Thus the range of vision is narrowed - a person is unable to see objects clearly to the side.

"These facts suggested the possibility that persons who habitually live on a low vitamin A diet may be the cause of many automobile accident occurring in the dim dusk of twilight, or after dark when drivers stare into the bright lights of approaching automobiles and do not regain normal vision.

"As the scientists explain, low vitamin A diets not only cause night blindness, but also narrow the field of vision. Even in daylight persons on such diets would not have the proper side vision to prevent them from cutting into cars running by their side or to enable them to see cross traffic approaching when near intersections. At night they are less likely to see pedestrians walking at the side of the road.

"So Dr. Lela E. Booher and her associates decided that if they could test the presence or absence of night blindness in human beings and measure the amount of vitamin A in the food taken, they could learn how much vitamin A is necessary for an average person each day.

Then our correspondent goes on to tell the way the tests were made!

"Five Bureau staff members- two men and three women- consented to an unusual experiment in which all the food they ate for six months was prepared in the laboratory kitchen. Literally every bite of the food was weighed to be sure that each one was receiving an ample and constant supply of calories, protein, fat, calcium, phosphorus, iron, and all the known vitamins except vitamin A. It was kept as low as possible. The subjects neither gained nor lost weight, and, except for the night blindness that developed, they appeared normal and healthy throughout the experiment.

"Before starting the experimental diet, the eyes of each person were tested to determine their normal adaptability to darkness. This was done with a sensitive instrument known as the visual adaptometer, by which it is possible to measure the exact intensity of light required by the subject to see. The subject was first exposed to a bright light and then looked steadily at a dim pinpoint of light. A light placed to one side was flashed with increasing intensity until the subject noticed it. The degree of night blindness was determined by the intensity of this flash when the subject first saw it.

"While on the very low vitamin A diet, measurements were made every few days until the eyes of the persons were not adapting to darkness normally. The length of time before night blindness signs appeared varied from 2 to 18 weeks with different individuals. The night blindness came on so gradually that without these tests it would not have been noticed. So it is possible that many persons may have impaired vision in dim light without realizing it.

"After the subjects showed unmistakable signs of night blindness they were given measured amounts of cod liver oil until normal vision was restored and maintained. The same test was run using vitamin A in the form of carotene, which is the source of vitamin A in all plant foods. Or more exactly, carotene from plant foods is transformed into vitamin A in the liver.

"The amount of vitamin A necessary for adults is related to body weight. The bureau investigators found that the minimum requirement varied between 25 and 56 international units per kilogram of body weight, when derived from cod liver oil. A person weighing 132 pounds should have at least 3,600 international units daily, or about 2.16 milligrams. The amount of carotene required was higher, since the carotene was only about 60 percent as efficient as vitamin A from fish-liver oil. Moderate daily servings of whole milk, cream, butter, eggs, tomatoes, and the leafy green and yellow vegetables insure an ample amount of vitamin A. Liver is an excellent source of this vitamin, and so is cheese, if made from whole milk."

That concludes our Washington letter.

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